



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,349	03/30/2004	Tomoo Iijima	040158	2684

38091 7590 09/14/2006

TESSERA
LERNER DAVID et al.
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

EXAMINER

LE, THAO X

ART UNIT PAPER NUMBER

2814

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,349

Applicant(s)

IIJIMA ET AL.

Examiner

Thao X. Le

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 52-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/4/6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 56 is objected to because of the following informalities: line 26 "said dielectric element" should be "said rigid dielectric element". Appropriate correction is required.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/04/06 has been entered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 52-54 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6050832 to Lee et al.

Regarding claim 52, Lee discloses a wiring circuit panel in fig. 1 comprising: a first metal layer 26, col. 4 line 61, having a major surface extending in lateral direction, said first metal layer 16 including a wiring circuit pattern 26; an insulating film 18, col. 9 line 1, overlying said major surface of said first metal layer 26, said insulating film having a major surface remote from said major surface of said first metal layer 26; a plurality of discrete solid metal bumps 28 overlying said first metal layer 26 and extending upward through openings in said insulating film 18, said plurality of metal bumps having upwardly facing top faces, said top faces being flush with exposed regions of said major surface of said insulating film 18, fig. 1; and a plurality of solder balls 16, col. 4 line 55, disposed on said top of said plurality of metal bumps 28, said plurality of solder balls 16 being in conductive communication with said metal bumps 28, col. 4 lines 54-55.

Regarding claims 53-54, Lee discloses the wiring circuit wherein the first metal layer 26 and plurality of bumps consist essentially of copper, col. 9 line 27, wherein at least a portion of insulating film 18 is flexible, col. 9 line 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 55-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over 6050832 to Lee et al. in view of Applicant Admitted Prior Art (APA).

Regarding claim 55, Takubo does not disclose the wiring circuit panel as claimed in claim 52 wherein said tops of each of said plurality of metal bumps 33 include an upwardly facing concave surface and said plurality of solder balls contact said concave surfaces of said plurality of metal bumps.

However, APA discloses the wiring circuit panel as claimed in claim 52 wherein said tops of each of said plurality of metal bumps 6 include an upwardly facing concave surface, fig. 13G, and said plurality of solder balls 12 contact said concave surfaces of said plurality of metal bumps 6. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the concave surface the teaching of APA with Takubo's device, because it would have provided a better mating surface for the solder ball. Furthermore, the Applicant has no support data, which convinces that the particular claimed

configuration is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces. In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3,24 (USSC 1878).

Regarding claim 56, Lee discloses a circuit module in fig. 1 comprising: a flexible circuit panel including a first metal layer 26 including a wiring circuit pattern 26 having a major surface extending in lateral directions; a substantially flexible insulating film 18 overlying said surface of said wiring circuit pattern 26, said insulating film 18 having a major surface remote from said major surface of said wiring circuit pattern 26, a plurality of discrete solid metal bumps 28 overlying said major surface of said wiring circuit pattern 26 and extending upward through openings in said insulating film 18, said plurality of metal bumps having upwardly facing top faces, said top faces being flush with exposed regions of said major surface of said insulating film; and a plurality of solder balls 16 disposed on said tops of said plurality of metal bumps 28, said solder balls 16 being in conductive communication with said plurality of metal bumps 28; and a second circuit panel 14 having a substantially rigid dielectric element 14, col. 4 line 39, and said second circuit panel 14 being joined to said flexible circuit 18 and communicate with said wiring circuit pattern of said flexible circuit panel 18 through said plurality of metal bumps 18.

But Lee does not disclose a second circuit panel having a second wiring circuit pattern overlying at least a portion of said rigid dielectric element.

However, APA discloses a circuit module comprising a first flexible insulating circuit panel 4 having first circuit pattern 10, a second rigid insulating 14 having a second wiring circuit pattern 16 overlying at least a portion of said rigid dielectric element and is joined to said flexible circuit panel 4 such that said second wiring circuit pattern 16 conductively communicates with said flexible wiring circuit pattern 4 through said plurality of metal bumps 6, fig. 13I. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the circuit pattern teaching of teaching of APA with Lee's device, because such circuit pattern on the circuit board is typical in the art.

Regarding claim 57, Lee discloses the wiring circuit panel as claimed in claim 52, the first metal layer 26, said plurality of metal bumps 28 overlying said first metal layer 26.

But, Lee does not disclose the wiring circuit panel further including a second metal wherein said second metal layer is an etch stop layer which substantially resists an etchant which would attack a first metal included in said first metal layer.

However, APA discloses the wiring circuit panel further including a second metal 8 (20b) wherein said second metal layer is an etch stop layer which substantially resists an etchant which would attack a first metal 10 (20c) included in said first metal layer, specification page 3 lines 1-7. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the second barrier layer 8 (20b) teaching of APA with Lee's, because it would

have provided the protection for the wiring layer as taught by APA, specification page 3 lines 6-7.

Regarding claims 58-59, Lee discloses the wiring circuit panel as claimed in 57 comprises plurality of metal bumps 16, wherein said plurality of metal bumps 28 and said first metal layer 26 consists essentially of a first metal.

The process limitations 'metal bumps are formed by etching a third metal layer overlying said second metal layer' in claim 58 do not carry weight in a claim drawn to structure. In re Thorpe, 277 USPQ 964 (Fed. Cir. 1985).

Response to Arguments

8. Applicant's arguments filed 04 Aug. 2006 have been fully considered but they are not persuasive. The Applicant argues that the solder balls 16 of Lee are disposed on the top of contact layer 30 rather on the via connection 28. It is apparent that the Applicant's interpretation of the word 'ON' means 'in contact with'. The Examiner submits that the word 'ON' has multiple meanings including 'indicate position in close proximity with'. Thus, it would read on the claim language. It is noted that the features upon which applicant relies on are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'THAO X. LE', with a horizontal line extending to the right.

THAO X. LE
PRIMARY PATENT EXAMINER

11 Sept. 2006